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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/724,915

12/01/2003

Kuo-Ming Wu

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EXAMINER

MALEK, LEILA

ART UNIT

PAPER NUMBER

2611

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/724,915	<b>Applicant(s)</b> WU ET AL.	
	<b>Examiner</b> LEILA MALEK	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 is/are allowed.
- 6) ☒ Claim(s) 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/01/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed on 04/21/2008 have been fully considered but they are not persuasive.

**Applicant's Argument:** Applicant argues that Choi fails to disclose limitation "the best state is selected from local winner states every L iterations".

**Examiner's Response:** Examiner respectfully disagrees. Choi discloses (see column 1, lines 56-65) that while there are several survival paths, there is only one minimum accumulated cost path. Choi further discloses that the individual state (this individual state has been interpreted as the best state, since it has the minimum accumulated cost path) in the trellis associated with the minimum accumulated cost in a trace-back is translated into a most likely bit to have been transmitted in that symbol instant. States associated with survival paths have been interpreted as local winner states and the one state associated with the minimum accumulated cost path has been interpreted as the best state. Therefore, the best state is selected from local winner states. Choi further discloses that 64 decision bits needed to form a 64-bit decision vector (see column 2, lines 40-43). Therefore the add-compare-select operation has been performed iteratively to obtain all the 64 decision bits. Since the best state is determined after the decision vector has been generated (i.e. after 64 iterations) (see columns 1 and 2 and the summary of invention), the best state is selected after L (i.e., 64) iterations.

**Applicant's Argument:** Applicant argues that Choi fails to disclose limitation "finding a global survivor path sequence by following said decision vectors back from a best state at instant i-L, such that L decoded bits are output every L iterations".

**Examiner's Response:** Examiner respectfully disagrees. Choi discloses finding a global survivor path sequence (see the abstract and column 1, lines 60-65) by following the decision vectors back from the best state at instant i-L (see column 1, line 56- column 2, line 64), such that L decoded bits are output every L iterations (see column 2, lines 40-47).

**Applicant's Argument:** Applicant argues that Choi fails to show limitation "the states are divided into the pairs of odd and even states".

**Examiner's Response:** Examiner respectfully disagrees. In Fig. 1, Choi shows states, S0-S5, wherein the states are divided to odd states (S1 and S3) and even states (S2 and S4).

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Choi (US 5,878,092).

Choi discloses a decoding apparatus (see Fig. 1) for a Viterbi decoder (see column 1, last paragraph) with a constraint length of K (see column 2, line 1),

comprising: a register-exchange network (see Fig. 1, block 13 and column 2, lines 28-67) for receiving decision bits of states ( $DB_i$ ) and generating decision vectors (see column 2, lines 40-47) of survivor paths leading to the states at instant  $i$  according to the decision bits of the states from instant  $i-L$  to instant  $i$  (see columns 1 and 2), wherein the states are divided into the pairs of odd and even states (see Fig. 1, S0-S5), the decision vectors of the states are output every  $L$  iterations (see column 2, lines 40-43) (Choi further discloses that 64 decision bits form a 64-bit decision vector. Therefore the add-compare-select operation has been performed iteratively to find all the 64 decision bits), and each of the decision vectors has a length of  $L$  bits (see column 2, lines 40-43); and a trace-back unit for storing the decision vectors of the states (see column 2, lines 44-47) and finding a global survivor path sequence (see the abstract and column 1, lines 61-65) by following the decision vectors back from a best state at instant  $i-L$  (see column 1, line 56- column 2, line 64), such that  $L$  decoded bits are output every  $L$  iterations (see columns 2). Choi discloses (see column 1, lines 56-65) that while there are several survival paths, there is only one minimum accumulated cost path. Choi further discloses that the individual state (this individual state has been interpreted as the best state, since it has the minimum accumulated cost path) in the trellis associated with the minimum accumulated cost in a trace-back is translated into a most likely bit to have been transmitted in that symbol instant (states associated with the survival paths have been interpreted as local winner states and the state associated with the minimum accumulated path has been interpreted as the best state). Therefore, the best state is selected from local winner states. Choi also discloses that since 64 decision bits form a

64-bit decision vector (see column 2, lines 40-43), the add-compare-select operation has been performed iteratively to obtain all the 64 decision bits. Since the best state is determined after the decision vector has been generated (i.e. after 64 iterations) (see columns 1 and 2 and the summary of invention), the best state is selected after L (i.e., 64) iterations.

### ***Allowable Subject Matter***

3. Claim 1-14 allowed. The following is an examiner's statement of reasons for allowance: The combined limitations of a best survivor unit where local winner states are chosen from  $2^{K-2}$  pairs of odd and even states, respectively and a survivor memory comprising: a register-exchange network for receiving decision bits of  $2^{K-1}$  states and generating decision vectors of survivor paths leading to said  $2^{K-2}$  states at instant  $i$  according to said decision bits of said  $2^{K-1}$  states from instant  $i-L$  to instant  $i$ , wherein said  $2^{K-1}$  states are divided into said  $2^{K-2}$  pairs of odd and even states, said decision vectors of said  $2^{K-1}$  states are output every L iterations, and each of said decision vectors has a length of L bits and a trace-back unit for storing said decision vectors of said  $2^{K-1}$  states and finding a global survivor path sequence by following said decision vectors back from the best state at instant  $i-L$ , such that L decoded bits are output every L iterations cannot be found in the prior art of record.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leila Malek whose telephone number is 571-272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leila Malek  
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